

**Notice of Allowability**

Application No.

10/755,083

Examiner

Rip A. Lee

Applicant(s)

JENSEN ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to October 7, 2005.
2. ☒ The allowed claim(s) is/are 1-29 and 58.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10-27-05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

***Allowable Subject Matter***

The following is an examiner's statement of reasons for allowance: Claims 1-29 and 58 are allowed over the closest references cited below.

The present invention is drawn to a catalyst composition comprising the contact product of at least one first metallocene, at least one second metallocene, at least one chemically treated solid oxide comprising a solid oxide treated with an electron withdrawing anion, and at least one organoaluminum compound. The at least one first metallocene is an *ansa*-metallocene selected from  $(X^1)(X^2)(X^3)(X^4)M^1$  or *rac*- $(X^1)(X^2)(X^3)(X^4)M^1$  (see claims for structural details). The second metallocene is an *ansa*-metallocene having formula  $(X^5)(X^6)(X^7)(X^8)M^2$  where  $(X^5)$  and  $(X^6)$  are substituted cyclopentadienyl. Another embodiment of the invention is drawn to a composition of matter comprising said catalyst composition. A final aspect of the invention is drawn to a process for making said catalyst composition.

Specia *et al.* (U.S. 5,786,291) teaches a supported catalyst comprising a first metallocene ( $Me_2Si(THI)_2ZrCl_2$ ) and a second metallocene ( $Me_2Si(Me_2Ind)ZrCl_2$ ). The silica support has been chemically treated with chlorosilane prior to loading of the metallic components. The patent does not teach use of *ansa*-metallocenes having formula  $(X^5)(X^6)(X^7)(X^8)M^2$  as required by the instant claims. Moreover, the reference does not teach use of solid oxide support treated with an electron withdrawing anion.

McDaniel *et al.* (U.S. 6,388,017) teaches a process for producing a polymer composition by combining a high molecular weight polymer with a base polymer. This is achieved by using a mixed catalyst system comprising a fluorided, titanium containing silica-alumina catalyst, which is used to produce the high molecular weight component, and a metallocene, which is used to make the low molecular weight base resin. An unbridged metallocene is used in the examples, but use of bridged metallocenes is contemplated in an cited patent, the contents of which were incorporated by reference. However, Ziegler-Natta catalysts and chromium catalysts may also be used to make the base resin as well. McDaniel *et al.* contemplates use of a catalyst system

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containing two metallocenes, however, there is no indication as to what metallocene is appropriate for producing the high molecular weight component. It is not clear whether this second metallocene is loaded onto the fluorided support or replaces it altogether (in which case, the catalyst would not contain the critical feature of the instant claims). In light of these deficiencies, it is deemed that McDaniel *et al.* does not teach or make obvious the subject matter of the instant claims. One having ordinary skill in the art would not have found it obvious to arrive at the claimed combination of metallocenes to produce the catalyst of the instant claims.

Kuo *et al.* (U.S. 6,875,828) discloses a supported bimetallic catalyst composition for producing a bimodal polyolefin composition. The first catalyst component does not contain metallocene, and the second catalyst component comprises a metallocene having at least one fluoride leaving group. The bimetallic catalyst is supported on enhanced silica. According to the specification, dehydroxylation by calcining is sufficient, however, the support may be further treated with fluoride. The inventors contemplate that “for certain applications the first catalyst component may alternatively be a metallocene compound or one of the metallocene-type compounds identified [in the text] that is different in structure from the second catalyst component.” This is the only place in the patent in which use of two metallocenes is described, and hence, it is deemed that one of ordinary skill in the art is unlikely to pursue this option. Even if one of ordinary skill in the art were astute enough to follow this suggestion, he would not have found it obvious to arrive at the particular combination of metallocenes recited in the instant claims. This notion is corroborated by the fact that Kuo *et al.* presents five pages of different types of metallocene. One of ordinary skill in the art would not have found it obvious to arrive at the claimed combination of metallocene from such an extensive listing.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

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The prior art made of record on the accompanying PTO-892, but not relied upon, is considered pertinent to the Applicant's disclosure. The following references have been cited to show the state of the art with respect to catalyst compositions comprising two or more metallocenes. None of the cited references teaches use of a solid oxide treated with electron withdrawing anion. Those cited patent sharing a common assignee are cited to show the state of the art with respect to catalyst comprising solid oxide treated with electron withdrawing anion. None of these references teaches use the two types of metallocene of the instant claims. There is no teaching or suggestion to combine references to arrive at the features of the instant claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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December 15, 2005



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